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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/719,509

11/21/2003

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EXAMINER

TU, JULIA P

ART UNIT

PAPER NUMBER

2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/07/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/719,509

Applicant(s)

CHOI ET AL.

Examiner

Julia P. Tu

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 5-9 is/are rejected.
- 7) ☒ Claim(s) 2-4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                       |                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                           | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Specification*

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet **within the range of 50 to 150 words**. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

### *Specification*

The disclosure is objected to because of the following informalities: The examiner suggests to change "a computer readable recoding medium" in line 9, page 14 to "a computer readable medium"

Appropriate correction is required.

### *Claim Objections*

2. Claims 2-4, 6 and 9 are objected to because of the following informalities: The examiner suggests to change the following:

In claims 2 and 6, define  $\Phi$ .

Claims 3 and 4 should depend on claim 2 instead of claim 1.

In claim 9, line 1, change "a computer readable recoding medium" to "a computer readable medium"

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 5-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claims 5 and 9 recite the limitation "the sector phase quantizer" in line 5, page 17, and in line 16, page 18. Claims 5 and 9 also recite the limitation "the re-encoder" in line 9, page 17 and in line 20, page 18. There is insufficient antecedent basis for those limitations in the claims.

Claims 6-8 are rejected as incorporating the deficiency of claim 5 upon which the depend.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

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7. Claims 1 and 5 are rejected under 35 U.S.C. 102(a) as being anticipated by Applicant Admitted Prior Art (AAPA).

(1) with regard to claim 1:

As shown in figure 1, AAPA discloses a pragmatic trellis code modulation TCM decoder, comprising:

a demodulator for receiving a modulated signal and computing coordination values of symbols of the modulated signal on an I-axis and Q-axis in a constellation (block 121 in figure 1, page 1, paragraph [0010]);

a coset mapper for generating 3-bit soft decision data based on the computed coordinate values (block 123 in figure 1);

a viterbi decoder for receiving 3-bit soft decision data and generating 1-bit data as a coded data by decoding the 3-bit soft decision data (block 124 in figure 1, page 1, paragraph [0013]);

a re-encoder for receiving the 1-bit data from the viterbi decoder and obtaining un-coded information in order to compute an un-coded data (block 125 in figure 1, page 1, first part of paragraph [0013]);

a sector phase quantizer for obtaining I channel and Q channel information based on the coordination values from the demodulator in order to obtain un-coded data (block 122 in figure 1, page 1, paragraph [0014]);

a time delayer for delaying output of the sector phase quantizer until the re-encoder outputs the un-coded information (block 126 in figure 1); and

a non-coded code decoder for computing the un-coded data by decoding the output of the sector phase quantizer based on the un-coded information from the re-encoder and the I channel and Q channel information from the sector phase quantizer (block 127 in figure 1, last part of paragraph [0015]).

(2) with regard to claim 5:

As shown in figure 1, AAPA discloses a decoding method for a pragmatic trellis code modulation TCM decoder, comprising the steps of:

a) receiving a modulated signal and computing coordination values of symbols of the modulated signal on an I-axis and Q-axis in a constellation (block 121 in figure 1, page 1, paragraph [0010]);

b) generating 3-bit soft decision data based on the computed coordinate values (block 123 in figure 1);

c) receiving the 3-bit soft decision data and generating 1-bit data as a coded data by decoding the 3-bit soft decision data (block 124 in figure 1, page 1, paragraph [0013]);

d) receiving the 1-bit data and obtaining un-coded information in order to compute an un-coded data (block 125 in figure 1, page 1, first part of paragraph [0013]);

e) obtaining I channel and Q channel information based on the coordination values from the demodulator in order to obtain un-coded data (block 122 in figure 1, page 1, paragraph [0014]);

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f) delaying an output of the sector phase quantizer until step d) outputs the un-coded information (block 126 in figure 1); and

g) computing the un-coded data by decoding the output of the sector phase quantizer based on the un-coded information from the re-encoder and the I channel and Q channel information from the sector phase quantizer (block 127 in figure 1, last part of paragraph [0015]).

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Langberg et al. (US 5,852,630).

As shown in figure 1, AAPA discloses a decoding method for a pragmatic trellis code modulation TCM decoder, comprising the steps of:

a) receiving a modulated signal and computing coordination values of symbols of the modulated signal on an I-axis and Q-axis in a constellation (block 121 in figure 1, page 1, paragraph [0010]);

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b) generating 3-bit soft decision data based on the computed coordinate values (block 123 in figure 1);

c) receiving the 3-bit soft decision data and generating 1-bit data as a coded data by decoding the 3-bit soft decision data (block 124 in figure 1, page 1, paragraph [0013]);

d) receiving the 1-bit data and obtaining un-coded information in order to compute an un-coded data (block 125 in figure 1, page 1, first part of paragraph [0013]);

e) obtaining I channel and Q channel information based on the coordination values from the demodulator in order to obtain un-coded data (block 122 in figure 1, page 1, paragraph [0014]);

f) delaying an output of the sector phase quantizer until step d) outputs the un-coded information (block 126 in figure 1); and

g) computing the un-coded data by decoding the output of the sector phase quantizer based on the un-coded information from the re-encoder and the I channel and Q channel information from the sector phase quantizer (block 127 in figure 1, last part of paragraph [0015]).

AAPA disclose all of the subject matter as described above except for a preamble transmission program for causing a computer, which is housed in a mobile station.

However, Langberg et al. teach that the method and apparatus for a transceiver warm start activation procedure with recoding can be implemented in software stored in



a computer-readable medium. The computer-readable medium is an electronic, magnetic, optical, or other physical device or means that can be contain or store a computer program for use by or in connection with a computer-related system or method (column 3, lines 51-65). One skilled in the art would have clearly recognized that the apparatus of AAPA would have been implemented in a software. The implemented software would perform same function of the hardware for less expense, adaptability, and flexibility. Therefore, it would have been obvious to have used the software as taught by Langberg et al. in the invention as taught by AAPA in order to reduce cost and improve the adaptability and flexibility of the communication system.

***Allowable Subject Matter***

9. Claims 2-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten (1) in independent form including all of the limitations of the base claim and any intervening claims and (2) to overcome the objections set forth in the section of claim objections of this office action.

The following is a statement of reasons for the indication of allowable subject matter: The present invention comprises the pragmatic trellis code modulation TCM decoder wherein the coset mapper provides the 3-bit soft decision by using an equation as  $x' = \cos[2(\theta - \Phi)]$ ,  $y' = \sin[2(\theta - \Phi)]$  based on a phase difference between a basis phase and  $\theta$ . The prior art discloses the pragmatic trellis code modulation TCM decoder but fails to teach the coset mapper provides the 3-bit soft decision by using an equation as

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$x' = \cos[2(\phi - \Phi)]$ ,  $y' = \sin[2(\phi - \Phi)]$  based on a phase difference between a basis phase and  $\phi$ .

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julia P. Tu whose telephone number is 571-270-1087. The examiner can normally be reached on 7:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

J.T.  
03/05/2007

  
CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER